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Overview and Recent Results from the ZaP Flow Z-Pinch[1] U. SHUMLAK, J.M. BLAKELY, B.J. CHAN, D.J. DEN HARTOG, R.P. GOLINGO, S.D. KNECHT, B.A. NELSON, R.J. OBERTO, M.R. SYBOUTS, G.V. VOGMAN, Aerospace and Energetics Research Program, University of Washington — The ZaP Flow Z-pinch experiment at the University of Washington investigates the effect of sheared flows on MHD stability. The ZaP experiment generates an axially flowing Z-pinch that is 1 m long with a 1 cm radius. After assembly the plasma is magnetically confined for an extended quiescent period where the mode activity is significantly reduced. Plasma flow profiles show a sheared flow profile that is coincident with the low magnetic fluctuations during the quiescent period. The experimental flow shear exceeds the theoretical threshold for stability during the quiescent period and the flow shear is lower than the theoretical threshold at other times. Recent experimental modifications have increased the size of the inner electrode to improve neutral gas injection control and to increase the adiabatic compression of the Z-pinch plasma. Equilibrium consistency is evaluated by comparing interferometry measurements of density, Doppler line broadening for ion temperature, Thomson scattering for electron temperature, and magnetic field measurements. The Z-pinch equilibrium is completely described by a radial force balance. An overview of the experimental program, results, and future work will be presented.

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